Invasive Species Monitoring, Risk Assessments and Ecological Modeling

Objectives

This is a developing project with the objective of conducting ecological research on coastal and marine invasive species needed by resource managers to identify, prioritize, and implement management actions.

Project Summary

The number of coastal and marine invasive species (i.e. species purposefully or accidentally introduced in non-native environments) is occurring at an alarming rate. Invasive species are a major threat to marine ecosystems, comprising dramatic effects on biodiversity, biological productivity, habitat structure and fisheries.

The Biogeography Branch of NOAA's Center for Coastal Monitoring and Assessment has begun to conduct research on invasive species to provide resource managers the tools and data needed to make informed management decisions. Products will build on the Branch's expertise in spatial analyses and include deliverables such as:

- Early warning detection and monitoring designs,
- Risk assessments, and
- Ecological models.

Quantitative spatial analyses in the form of spatial characterizations and predictive models will form the core of deliverables. Early warning detection and monitoring systems, will draw upon conclusions generated from spatial analyses and threat assessments to offer the best potential of initially detecting high-priority threats and, if needed, monitoring invasive species and their impacts over time. Risk assessments will comprise methods to estimate the magnitude, probability, location (habitat), vector, immediacy, and irreversibility of threats. Ecological models, including forecasts, will assess and predict ecological consequences of marine invasive species establishment.

Research is intended to take place in numerous coastal areas. Currently, work is being conducted in the Northwestern Hawaiian Island's Papahānaumokuākea Marine National Monument. Monument staff and the Biogeography Branch in consultation with National Marine Fisheries Service's Coral Reef Ecosystem Division have arranged a field mission in April 2008 to collect data on alien species. The objectives of the mission will be to gather *in situ* alien species data, evaluate sampling technologies and predictive capabilities, and generate a survey baseline.

Pterois volitans. Photo by Paula Whitfield

Future Products

Report: An assessment of sampling technologies and predictive mapping capabilities for marine invasive species in the Papahānaumokuākea Marine National Monument

Partners

Papahānaumokuākea Marine National Monument
NMFS' Coral Reef Ecosystem Division

For More Information

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